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Correction to "Particle-in-cell simulations of the lunar wake with high phase space resolution"

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In the paper entitled "Particle-in-cell simulations of the lunar wake with high phase space resolution" by Paul C. Birch and Sandra C. Chapman (*Geophys. Res. Lett., 28,* 219-222, 2001) potential structures (shown in figure 3) with sharp peaked edge structures were shown. A scaling error has since been identified and the simulations have been rerun. Figure 3 below is the corrected electric potentials plot. Comparing this to figure 3 in the paper, the main difference is the absence of the peaked structure at $Y = \pm 1 R_L$ (hence the absence of enhanced electron density at those points). We still find the same potential drop at the beginning of the simulation (although larger in the revised figure, due to the scaling), and the peaked structures due to the two-stream instability. Figure 2 below is the corrected electron density plot. Comparing this to figure 2 in the paper, the main difference is the absence of enhanced electron density at $Y = \pm 1 R_L$. The rest of the structure is fundamentally the same. The density scale has changed since the electrons are now less strongly enhanced in the central wake region. We still see escaping electron structures, electron two-stream instability confining electrons (and ions) in the wake, and a rarefaction wave travelling away from the wake at the ion sound speed (the scaling alteration has changed the scale on the X axis; the rarefaction wave is where the electron density is $\sim 0.8 N_{SW}$ in the revised figure). The conclusions of the paper are unaffected. The detailed results of these new simulations will be published.

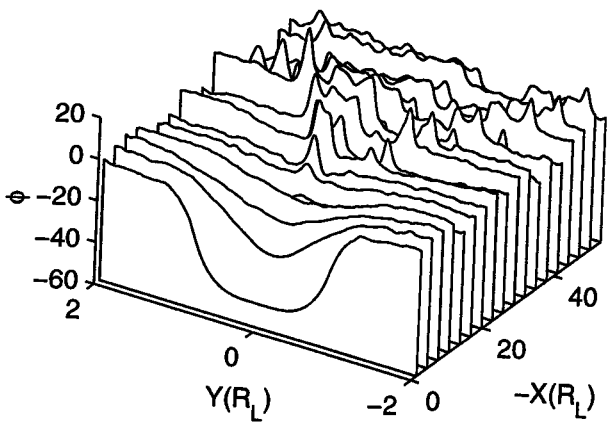

Figure 3. A stack plot of electric potentials (in units of eV) calculated from electric field data, plotted against distance along simulation box $Y(R_L)$ and time transformed to a distance behind the moon $X(R_L)$, beginning at $5.5\omega_{pe}^{-1} = 1.52 R_L$, then every $2.8\omega_{pe}^{-1} = 0.76 R_L$.

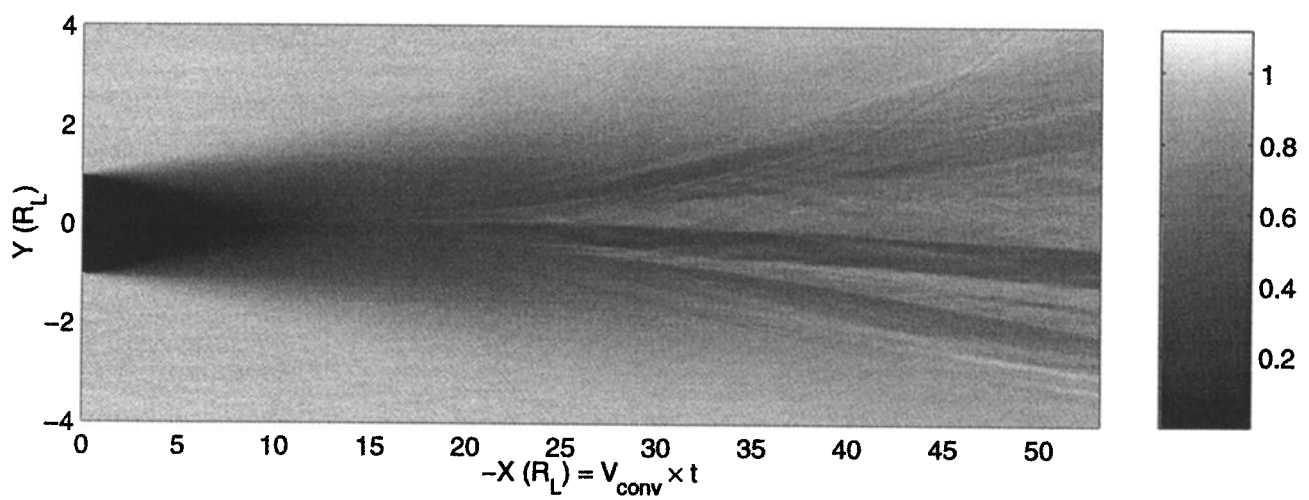

Figure 2. Electron density evolution shows distance along simulation box $Y(R_L)$ against time (distance behind moon) $X(R_L)$ with density normalised to the ambient solar wind density.

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